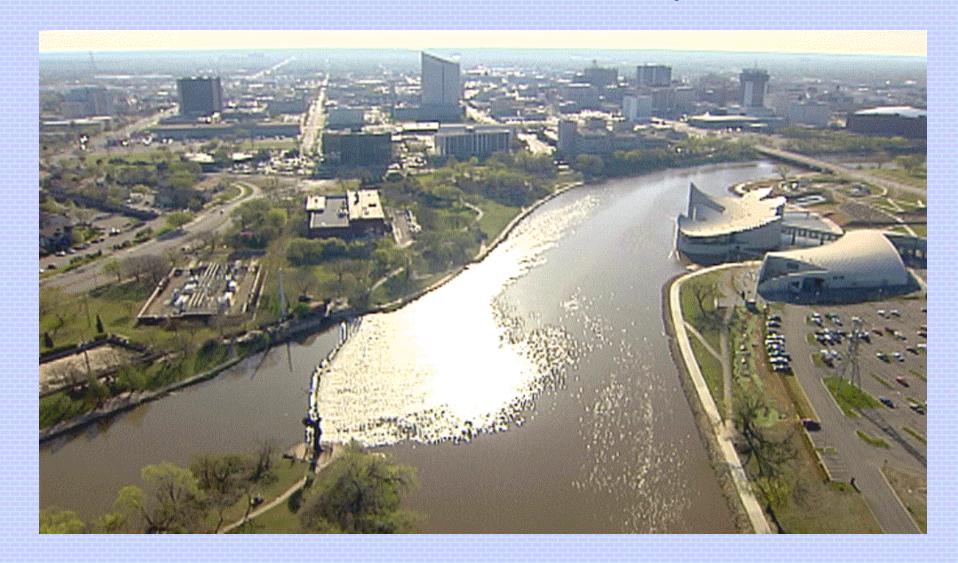
Ozone Issues The view from Wichita, Kansas



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Wichita Department of Environmental Health

- To view an e-copy of the presentationwww.wichita.gov/CityOffices/Health/Environmental/ Presentations
- For questions or further information call or email-
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AIR QUALITY is An Immediate Issue

(How long can you hold your breath?)

What is Ozone?

 Ozone, or smog, is an odorless, colorless gas composed of three oxygen atoms.

 Ozone occurs naturally about 10 to 30 miles above the earth and protects us from the sun's harmful ultraviolet rays.

 However, at ground-level in the air we breathe, ozone poses serious risks to human health.

Where Does Ozone Come From?

• Ozone is not emitted directly into the air but is created by a chemical reaction in the air:

| - | - | - | - | - | - | - |

VOC + NOx + Heat + Sunlight = Ozone

 Volatile Organic Compounds (VOC) and Nitrogen Oxides (NOx) come from cars, trucks, buses, power plants, industrial facilities, citizen activities and other sources.

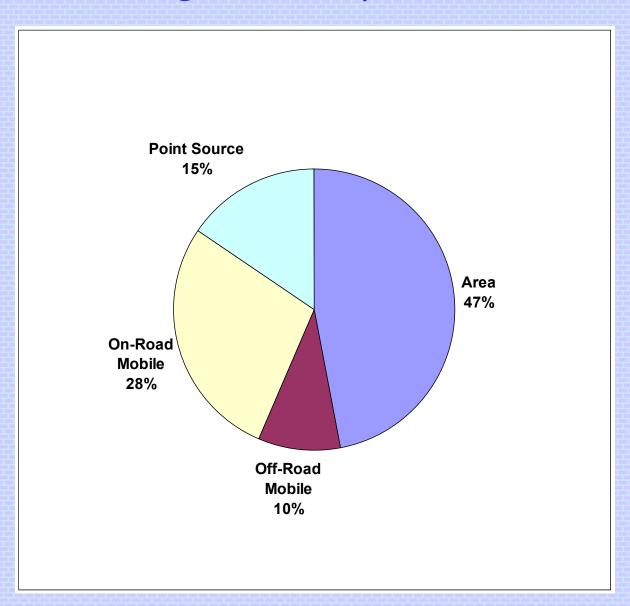






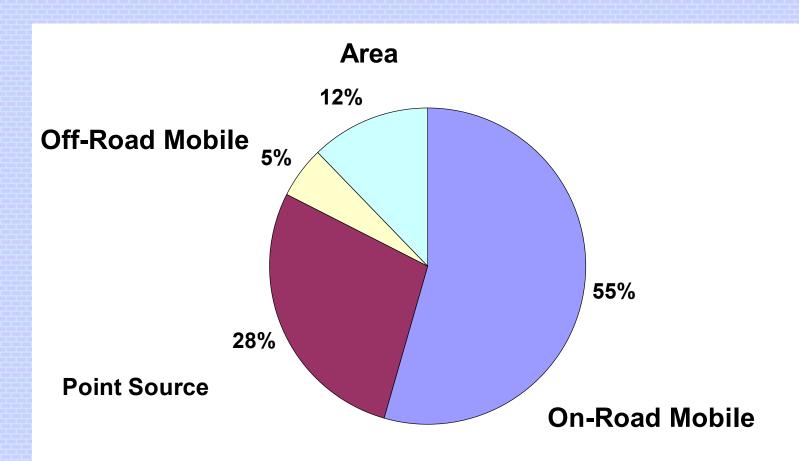
Annual VOC Emissions

Sedgwick County - 1999



Annual NOx Emissions

Sedgwick County - 1999



Ozone

· Is a Seasonal Pollutant

- · Highest pollution levels in summer
 - (May-September)
- Hot, sunny afternoons & evenings typically have the highest ozone concentrations

What is Ozone Pollution?



 Every day, the average adult breathes over 3,000 gallons of air, and children breathe even more air per pound of body weight.



- Ozone pollution has many effects on public health.
 Some of these are very serious.
- In the air we breathe, ozone poses serious risks to human health.
- Environmental repercussions Ozone also adversely affects domestic and native plants and animals.

Why is Ozone Bad to Breathe?

- Ozone can irritate lung and airways, and cause inflammation much like a sunburn on your lungs.
- Ozone can aggravate respiratory illnesses such as asthma.

 10 to 20 % of all summertime respiratoryrelated hospital visits in the US are associated with ozone pollution.

Health Effects of Exposure to Ozone

- · Coughing
- Nose and throat irritation



- · Chest pain
- · Reduced lung function



- · Increased susceptibility to respiratory illnesses
- Aggravation of asthma
- · Children and people with chronic lung diseases are particularly at risk



Health Effects of Exposure to Ozone

Asthma

is the fastest growing childhood disease in the United States

EPA's Revised Standard for Ozone

- Recent health effects studies showed that EPA's one hour ozone standard was not protective of public health.
- In November 1997, EPA proposed a new, stricter 8 hour ozone standard.
- After a long court challenge, the new standard is now in effect and will be used to designate nonattainment areas.
- The new standard is based on the fourth highest reading per year averaged over 3 years.

EPA's Revised Standard for Ozone (cont.)

- EPA will use the data from 2000 through 2002 for their first nonattainment designations for ozone under the new standard.
- States will recommend to EPA which urban areas would be nonattainment in 2003.
- EPA will formally designate new nonattainment areas for the 8 hour standard in 2004.



What is EPA's Air Quality Index?

- Using data from air quality monitors, the AQI tells you how clean or polluted your air is on a daily basis.
 Check your local paper or TV newscast for information about AQI levels, or visit (www.epa.gov/airnow).
- The AQI focuses on health effects that can happen within a few hours or days after breathing polluted air.
- AQI tracks five major air pollutants that have national standards: ground-level ozone, particulate matter, carbon monoxide, sulfur dioxide, and nitrogen dioxide. Ozone is responsible for most bad air days.

O₃, PM, CO, SO₂, & NO₂

The Air Quality Index (AQI)

Air Quality Index (AQI) Values	Levels of Health Concern
0 to 50	Good
51 to 100	Moderate
101 to 150	Unhealthy for Sensitive Groups
151 to 200	Unhealthy
201 to 300	Very Unhealthy
301 to 500	Hazardous

Health Warnings:

When the AQI is Unhealthy for Sensitive Groups

Ozone

Active children and adults, and people with respiratory disease such as asthma, should limit prolonged outdoor exertion.

Economic Effects of Ozone (NonAttainment)

- Increased costs to industry/commerce for air pollution controls
- Possible Motor Vehicle Inspection & Maintenance (I & M) Programs
- Government-More extensive
 Administrative and Planning requirements
 for transportation and other services
- · Less local control of funding priorities

How do we measure air pollution levels?

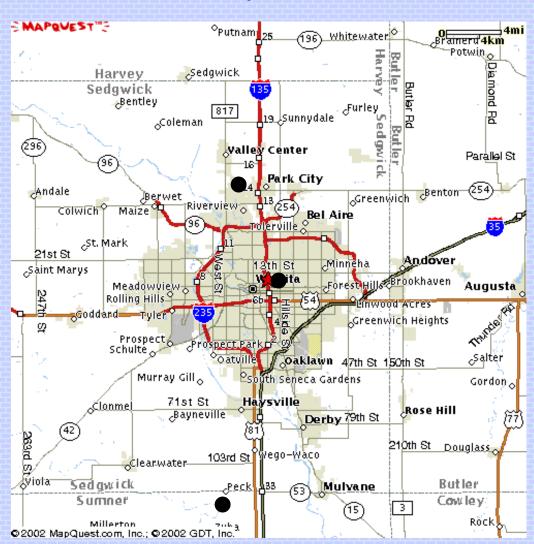
- An air quality monitor is an instrument that takes a sample of air and measures the amount of an air pollutant such as ozone or particulate matter in the air.
- All air monitors in the national network have to meet the same strict quality control standards so that data from all sites across the country is accurate and comparable.

Typical Air Monitoring Site Layout



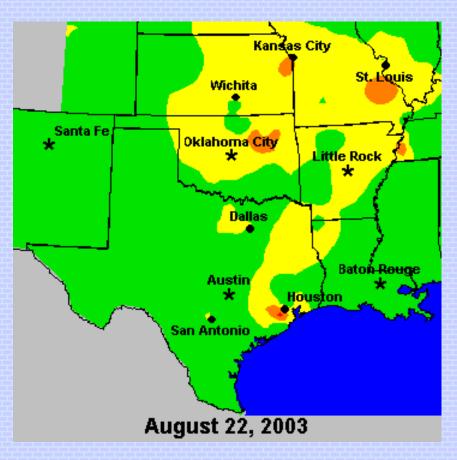
Location of Ozone Monitors in South Central Kansas

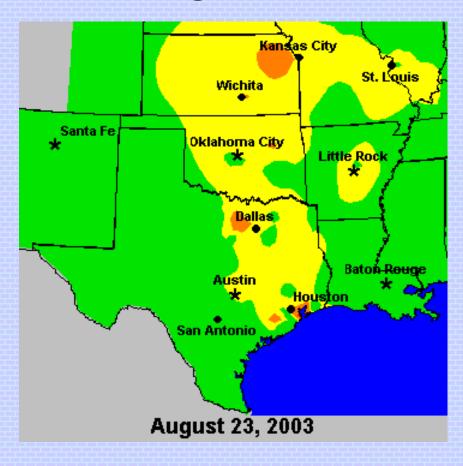
Ozone Monitor sites



What do These Maps Show?

(HINT) VOC + NOx + Heat + Sunlight = Ozone





Ozone Pollution

- The color maps you just saw show ozone smog levels for the south central part of the US on two days this summer.
- WHERE IS IT COMING FROM?
- Possible sources
 - Wichita citizens and businesses create our own urban air pollution.
 - Ozone precursor compounds are transported to the Wichita urban area from Mexico, Texas, & Oklahoma by our south winds.
 - · Combination of the two above scenarios

What Makes a Bad Air Day (Ozone) in South Central Kansas?

Hot temperatures...

+

Sunny skies... = unhealthy ozone levels

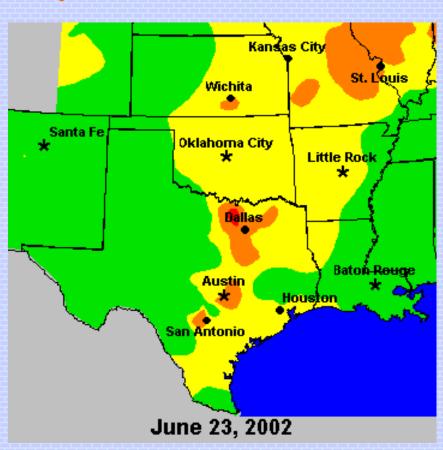
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South winds???

Wichita Dept of Environmental Health and KDHE are working together to determine:

-What local sources are significant contributors

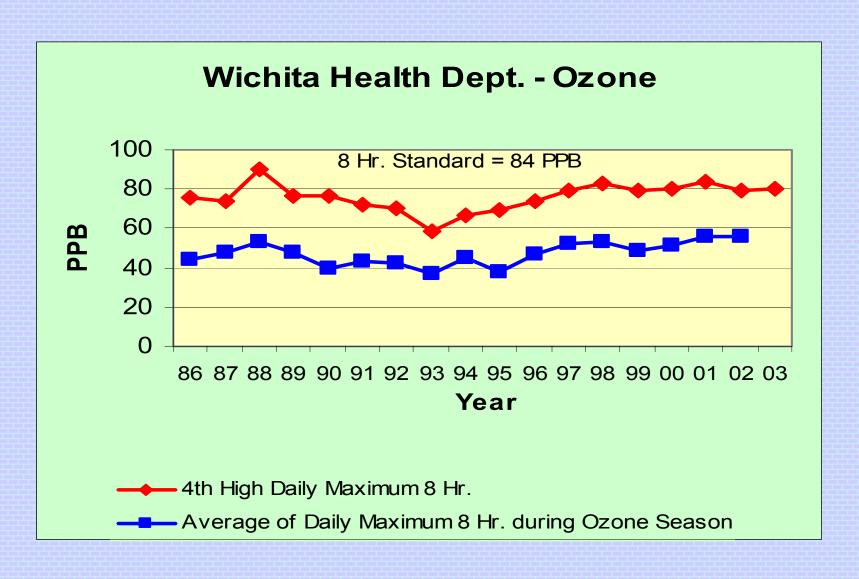
-The impact of weather and transport from other upwind urban/industrial areas



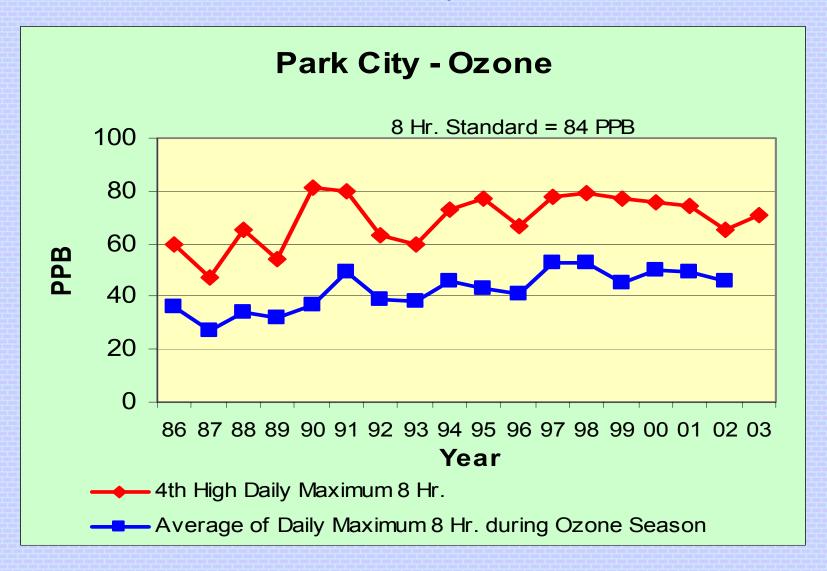
EPA's New Ozone Standard Impact on Wichita Urban Area

- As we have attained the one-hour standard, the new standard began to apply for us.
- As of 2003, we are in attainment with the new eight hour standard as well.
- Good News Our ozone levels for 2002 and 2003 (to date) are lower than we have had for several years. Related to the recession?
- Concern Some longer term trend data indicates actions may be needed to maintain the new standard.

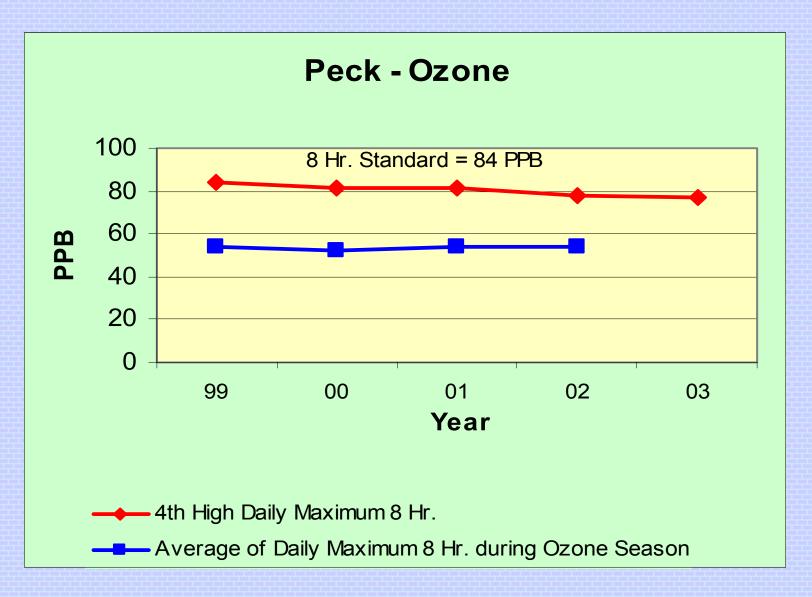
8 Hr Ozone Trends in Wichita (Main Health Dept site)



8 Hr Ozone Trends in Wichita (Park City site)



8 Hr Ozone Trends in Wichita (Peck site)



What Are We Doing About It?

- Wichita's Air Quality Improvement Task Force (AQITF)
 - Formed by City Management in 1999 to coordinate resources and develop strategies to reduce ozone in Wichita
 - Representatives from local government, industry, academia, environmental groups, etc
 - Voluntary Strategies
 - · Citizen Activities (Education/Awareness)
 - Businesses (Voluntary Reductions/Car Pooling, Etc)
 - Interim Report to City Management

What Are We Doing About It? (Continued)

Wichita's Air Quality Improvement Task Force (AQITF)

City of Wichita staff
Sedgwick County staff
Chamber of Commerce
Major Local Industries
Wichita State University
USD259
Sierra Club
Interested Citizens
Kansas Dept of Health & Environment
Kansas Dept of Transportation
US EPA, Region VII
US Dept of Transportation

What Are We Doing About It? (Continued)

- Emission Inventory of sources and activities that contribute to ozone in the urban area.
 - Help determine which ones are significant contributors and which are not

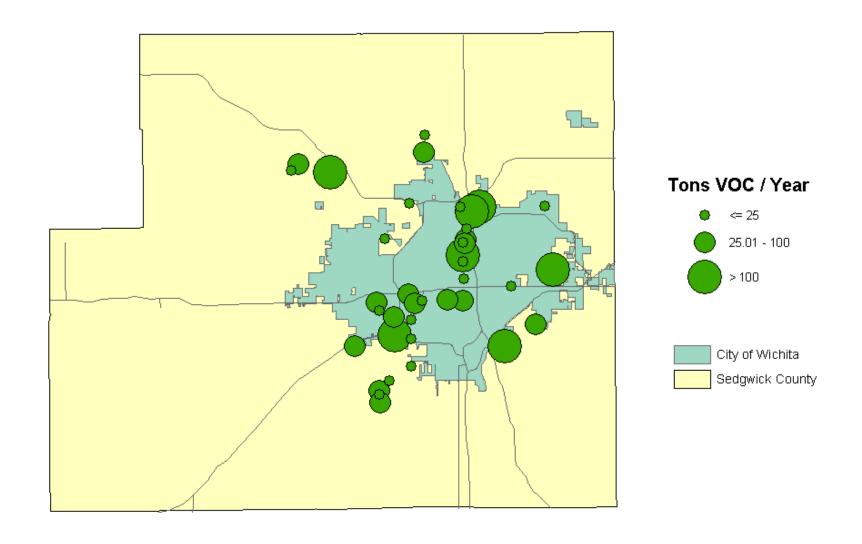
Why Do an Emission Inventory?

- · Improve quality of existing data
- Evaluate impact of proposed strategies
- Prepare for modeling
- Protect your interests
- Required if County goes nonattainment

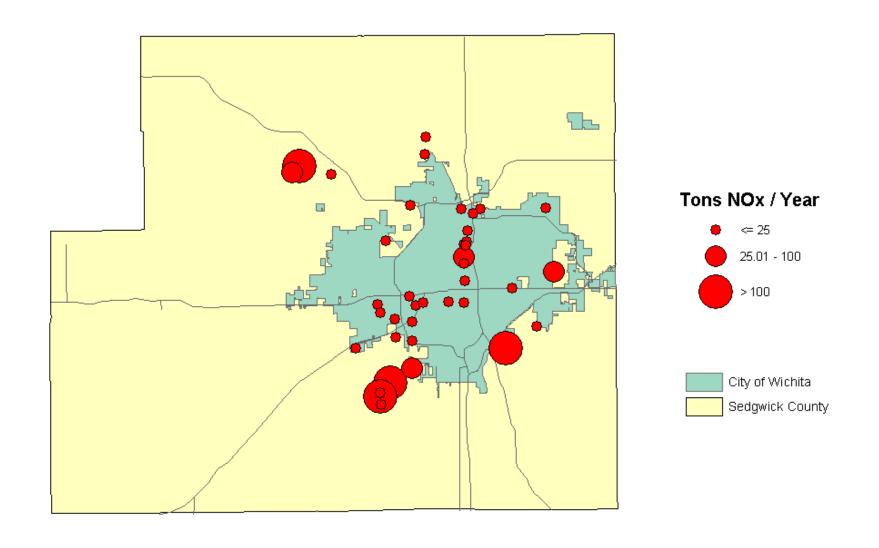
What not to expect

- · An easy answer to your ozone problem
- · 100% accuracy in the results
- · A static document

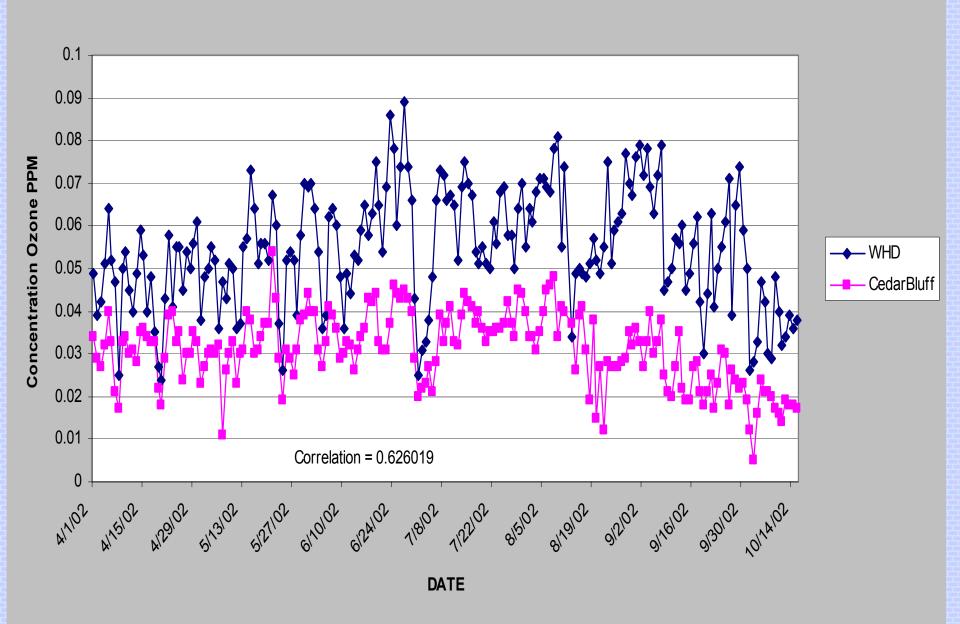
1999 VOC Point Source Emissions in Sedgwick County



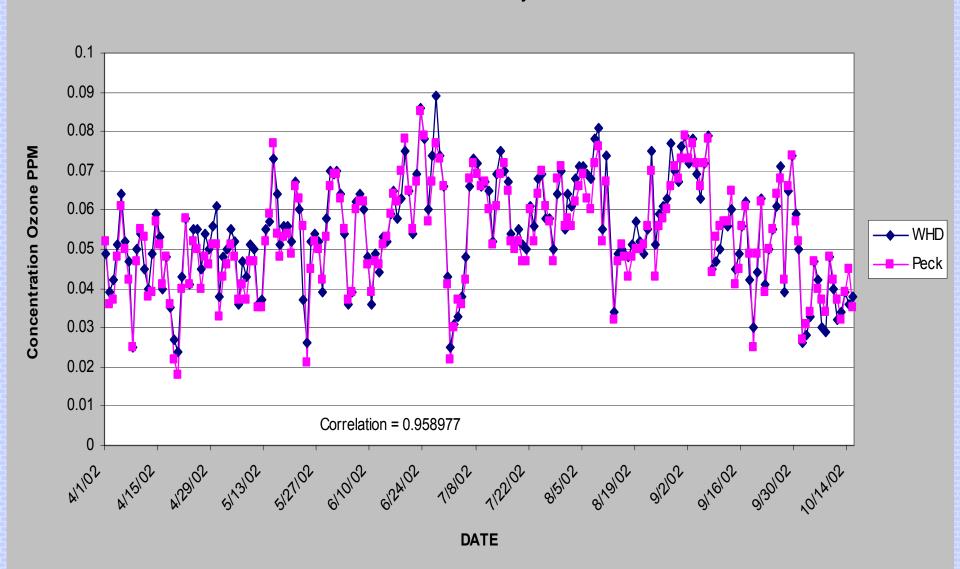
1999 NOx Point Source Emissions in Sedgwick County

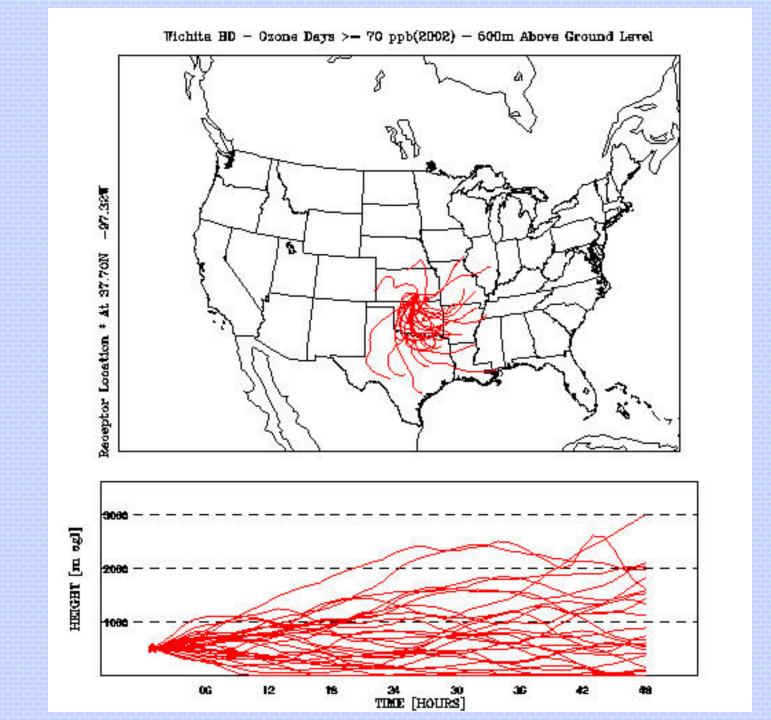


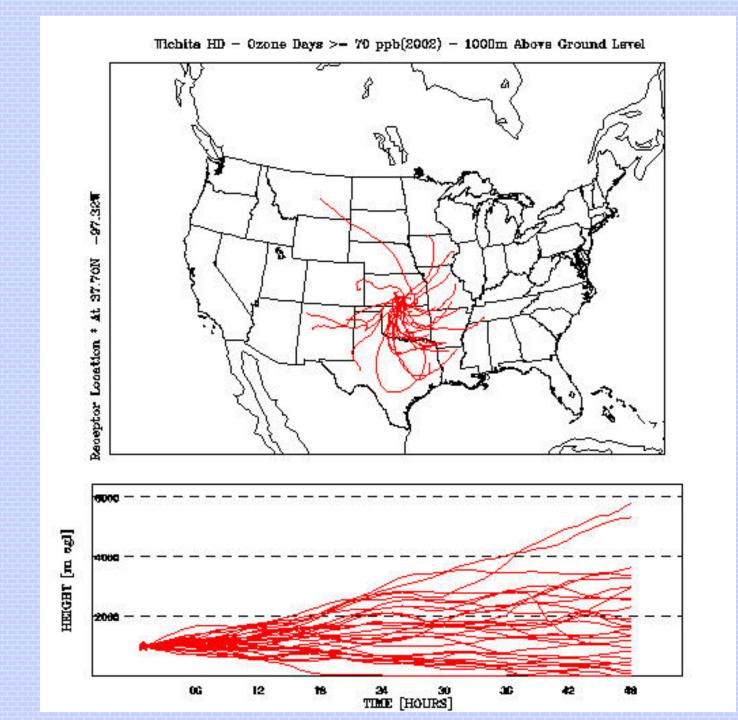
WichitaHD/CedarBluff 8hr Daily Maximum



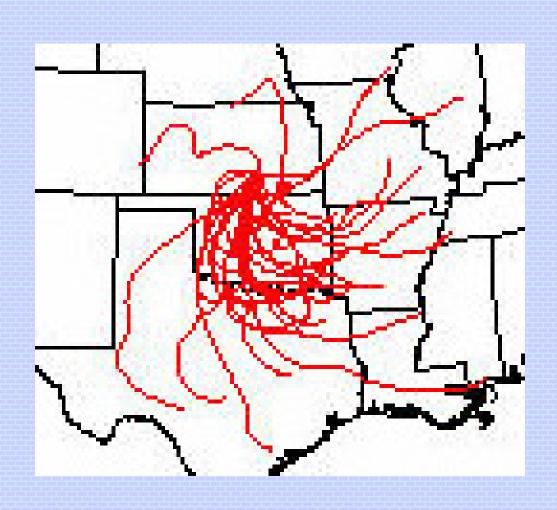
WichitaHD/Peck 8hr Daily Maximum







Wichita 500 M 48-hour Back Trajectory



What Are We Doing About It? (Continued)

 "Real Time" Air Quality Data on the Web at: www.wichitagov.org/health/airquality/ airquality_detail.asp

Provides helpful information, increases awareness, and provides education to citizens and businesses about ozone

What Are We Doing About It? (Continued)

- EPA's Voluntary Ozone Reduction Committee (VORC)
 - Comprised of representatives from urban areas in EPA Region VII that exceed or are close to exceeding the new 8 hour ozone standard
 - Group formed in 1999 to share developments and strategies for reducing ozone levels in our communities

Public Awareness

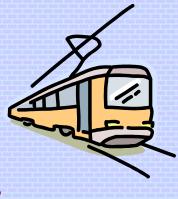
- · What is the best approach?
- How to raise the local level of awareness yet not create a negative image or unduly cause panic or alarm?
- Needs to be direct enough to create behavioral change.



What Can You Do?

- Conserve electricity do not over cool or heat buildings, turn off lights and other appliances when you are not using them
- Look for the energy star label (www.energystar.gov) when purchasing computers, TVs, VCRs, appliances, lighting, etc.
- Drive less, keep your car well maintained, and your tires properly inflated
- > Turn off your engine when your vehicle is not in motion
- Use public transportation, bike, and walk when possible
- Purchase low-emitting and fuel efficient vehicles (www.epa.gov/autoemissions)

What Can You Do?



- Avoid strenuous outdoor activities when ozone levels are high
- Share a ride or take public transportation



- > Cut your grass after 6 pm
- > Refuel your car after 6 pm (fuel when it's cool)
- > Combine your errands into one trip



Keep your car well maintained

- · Maintaining your car will-
- · help you protect your investment,
- · improve vehicle performance,
- · improve your gas mileage
- · -- and also help fight smog.

Drive Responsibly

- · Go Easy on the Brakes & Gas Pedal
- Avoid Long Idles
- Avoid Carrying Unneeded Items in the Trunk of the Car
- Avoid High Speeds
- Use the Air Conditioner Only When Necessary
- Use Overdrive for Highway Driving
- Keep Tires Properly Inflated & Aligned
- Get Regular Engine Tune-ups & Car Maintenance Checks

The Health, Environmental, & Economic Effects of Ozone Exposure Reduce the Quality of Life for All Of Us

QUESTIONS? COMMENTS?

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